PROJECT 16C

Western Canal Water District Water Use Efficiency Project

1. Project Description

Project Type:	**System improvement**
Location:	**Butte County**
Proponent(s):	**Western Canal Water District (District or WCWD)**
Project Beneficiaries:	**WCWD Feather River, downstream users, neighboring districts, growers**
Total Project Components:	**Short-term components only; this project has no long-term components associated with it**
Potential Supply:	**None**
Cost:	**$266,000 for the short-term component**
Current Funding:	**$265,000**
Short-term Components:	**Purchase of water management software and recorders**
Potential Supply (by 2003):	**None**
Cost:	**$266,000**
Current Funding:	**$265,000 from Water Use Efficiency (WUE) grants; may be unable to use portion of grant because of additional costs in developing meter calibration station**
Implementation Challenges:	**Potential controversy over the issue of real water or the transferability of this water in-basin**
Key Agencies:	**U.S. Bureau of Reclamation (USBR) and California Department of Water Resources (DWR)**

Summary

This project has two components. The first component is to purchase water management software including hand-held data recorders. The use of this software and equipment would allow greater flexibility of water deliveries and increase knowledge of applied water efficiency, which could reduce diversions from the Feather River. The second component would be the replacement of the current meter calibration station. The existing facility used to calibrate the District's water meters has limited accuracy. A new facility is estimated to increase accuracy to within 2 to 3 percent. These two components would enable the creation of a relational database to track water use efficiency and ensure accurate on-farm delivery to users.

Short-term Component

The water management software and water meter calibration station components would enable the District to create a relational database to track water use efficiency within the District and ensure accurate on-farm delivery to users. This project would partially address CALFED Quantifiable Objective No. 38 by reducing diversions from the Feather River.

This project would fill a critical local need for more reliable, accurate, and flexible water management. The resulting increase in water management would increase the efficiency of water users and the District, thus reducing costs for both.

This project would fill a critical Bay-Delta need of increasing flow to improve aquatic ecosystem conditions in the Feather River. This Bay-Delta need is embodied in the CALFED Quantifiable Objective No. 38.

This project is consistent with the CALFED WUE Program, the Agricultural Water Management Council priorities, Butte County Water and Resource Conservation Department principles, and Western Canal Water District's Water Management Plan, which calls for support of the availability of water management services to water users and accurate water measurement.

This project has two components to achieve increased water management efficiency:

- **Water management software**—The District would purchase water management software, H_2O Pro, to create a relational database. The software would allow the District to better track water use by users, fields, areas, and laterals. The scope of this component would include purchasing and installing H_2O Pro, purchasing six hand-held data recorders, and supporting the technical aspects of training and upgrades.

  The objective of this component is to reduce staff time associated with water use analysis, increase flexibility of water deliveries, and increase awareness of water use efficiency to users, which would increase the efficiency of applied water, thereby reducing diversions from the Feather River (CALFED Quantifiable Objective No. 38).

- **Water meter calibration station**—The District would replace the current meter calibration station with a new facility. An independent review by Cal Poly's ITRC found the old facility to be in a declining state with poor design, jeopardizing the accuracy of meter calibration. The proposed facility would increase the accuracy and reliability of the District's Meter Calibration Program. The scope of this component includes replacing the existing meter calibration station with a new facility that includes a Replogle flume structure, Waterman screw gates (12-, 18-, 21-, 24-, 30-, 36-, and 48-inch size), 40 feet each of reinforced concrete pipe (12-, 18-, 21-, 24-, 30-, 36-, and 48-inch), and meter brackets. This facility would have the ability to calibrate meters of various sizes at differing flows.

The objective of this short-term component is to increase the accuracy of flow meters for Western Canal Water District, which is a fully metered agricultural water district.

Technical/Scientific Merit, Feasibility, Monitoring, and Assessment

This project has two components to achieve increased water management efficiency:

- The water management software, H_2O Pro, along with hand-held data recorders would allow District personnel to better track water use among its growers. A relational database would reduce staff time in analyzing water use efficiency within the District. Currently, the District's water reporting methods are inadequate for detailed analysis of water use efficiency. While water meters are recorded on a daily basis, the data is only entered into a database on a bimonthly time step. Hand-held data recorders would automatically enter each daily reading into the computer, thus allowing instant access and reduce labor from data processing. The availability of real time data would be extended to growers to allow for better management decisions. Timely data made available to growers would increase flexibility and water use efficiency, which is expected to reduce diversions from the Feather River (CALFED QO No. 38). This software has been successfully implemented by other water districts within California and could easily tie into the USBR's data acquisition for a basinwide plan. Water management data compatibility with all water users would facilitate better coordination with local, state, and federal agencies.
- A new water meter calibration station would greatly increase the accuracy of the District's water meters. The current station is poorly designed and in a declining state. As one of the few fully metered agricultural water districts in California, it is imperative that water measurement accuracy be a priority. The current level of accuracy is unknown but believed to be within 10 percent. It is the District's goal to increase accuracy to within 2 to 3 percent . This goal is embodied by the Agricultural Water Management Council's Efficient Water Management Practice No. 10 (water measurement). The District operates a Meter Calibration Program where several meters are calibrated yearly. A new facility would enhance the District's Meter Calibration Program, thus ensuring accurate on-farm deliveries to customers.

Work Plan

Task 1—Purchase and install water management software, H_2O Pro, and hand-held data recorders

Task 2—Contract for engineering and design of water meter calibration station

Task 3—Preparation final design of water meter calibration station

Task 4—Contract for construction of water meter calibration station

Task 5—Prepare quarterly progress report

Task 6—Construct water meter calibration station

Task 7—Prepare final programmatic report to funding agency

It is anticipated that Task 1 could be implemented immediately upon receiving funding. Tasks 2 through 5 could also be implemented immediately. Task 6 would require dewatering the main canal system and could take place shortly after the irrigation season in mid-September. More recent analysis and evaluation of the second component has determined some downstream modifications would be needed for the construction of the

water meter calibration station. This was not anticipated when this grant was initially funded, which may leave this portion of the grant unfunded.

2. Potential Project Benefits/Beneficiaries

The District currently has the right to divert 295,000 ac-ft of surface water from the Feather River. This project has the potential to conserve water through increased efficiency and reduce its diversions from the Feather River. Monitoring procedures would be implemented to assess the effectiveness of the project. Comparisons would be made between historical data and post project data. Progress towards QO No. 38 would be measured by monitoring diversions from the Feather River and comparing diversion amounts from previous years. Water meter accuracy would be tracked by calibrating meters with the new facility and comparing those to the District's data generated by its Meter Calibration Program using the old facility. Meters would be calibrated to reflect the 2- to 3-percent accuracy goal. Meter accuracy would be assured, which would increase water use efficiency.

If the monitoring determines a reduction in surface water diversions due to increased efficiency, this reduction in diversions could be backed into storage depending on timing. This would then be a new water supply available for downstream users. Even if there is no opportunity to back this water into storage, the reduced diversions could potentially assist with downstream water quality. The reduced diversions could also leave water in the Feather River, which would increase flows assisting in environmental needs.

Depending on the outcome of other Sacramento Valley Settlement Agreement (Settlement Agreement) projects, the reduced diversions may be available for intra-basin transfers.

Outreach, Community Involvement, and Information Transfer

Efforts have been made to involve all entities that may have an interest in the project. Butte County Water and Resource Conservation Department has been contacted as well as the Agricultural Department at California State University, Chico. It is intended that this project be open to all who may benefit, including, but not limited to, District water users, water users from other water districts, county personnel, DWR staff, university and community college faculty and staff, and the general public. If available, locally owned disadvantaged businesses would be used to perform the engineering and/or construction of the project.

Once implemented, the project would be used to educate students from local universities and community colleges on water use efficiency. The District already engages students by conducting field tours of its water conveyance facilities. Neighboring water districts might also find the water use efficiency advances helpful within their own districts.

Information would be disseminated to all growers in an effort to improve water use efficiency. With more information, the growers would be able to improve on their water use management and improve the irrigation efficiency on their crops. The data would be available at all times to any member of the public. It is anticipated that growers would receive detailed reports on their water use after every irrigation season. If feasible, detailed monthly reports may also be distributed. Relevant data regarding individual meter calibration would also be distributed to water users.

External cooperators for this project include EasyReader International, Inc., which would sell, install, and train District personnel in the application of the water management software, H_2O Pro. Qualified engineering and construction firms would be required to design and build the meter calibration station. Preferably these companies will be classified as disadvantaged businesses.

The District has developed partnerships with the Butte County Water and Resource Conservation Department and the Agricultural Department at California State University, Chico. As well as providing growers with increased water management tools and improved water measurement accuracy, this project will serve as a valuable educational resource for students and the general public.

The District has participated in the extensive discussions, which have led to the draft Settlement Agreement currently being considered by the SWRCB in Phase 8 of the Bay-Delta hearings. This Settlement Agreement forms a partnership among Sacramento Valley water rights holders, including WCWD, water users within the export areas, DWR, and the USBR that has never been achieved to this magnitude in history. The Settlement Agreement recognizes the need to increase the overall water supplies available to all water users throughout the State and that a cooperative approach is the most effective means to meet this need. The Settlement Agreement and associated projects must be pursued in unison with CALFED goals, objectives, and program. The proposed project requested for funding under this grant application is a project that meets the common goals of the Settlement Agreement and CALFED.

3. Project Costs

The cost opinions shown, and any resulting conclusions on project financial or economic feasibility or funding requirements, have been prepared for guidance in project evaluation from the information available at the time of the estimate. It is normally expected that cost opinions of this type, an order-of-magnitude cost opinion, would be accurate within +50 to -30 percent. Project costs were developed at a conceptual level only, using data such as cost curves and comparisons with bid tabs and vendor quotes for similar projects. The costs were not based on detailed engineering design, site investigations, and other supporting information that would be required during subsequent evaluation efforts.

The final costs of the project and resulting feasibility will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, continuity of personnel and engineering, and other variable factors. As a result, the final project costs will vary from the opinions presented here. Because of these factors, project feasibility, benefit/cost ratios, risks, and funding needs must be carefully reviewed prior to making specific financial decisions or establishing project budgets to help ensure proper project evaluation and adequate funding.

Oversight labor is for the project manager and staff to assist subcontractors and ensure smooth transition in all phases of the project. Supplies are the necessary items for implementation of the project to better analyze the success of the project. Legal costs include time spent developing contracts and agreements with subcontractors to the project. Engineering costs would cover design and feasibility of the meter calibration station.

Software training and upgrades would allow District staff to properly use and maintain the water management software program.

This project is expected to increase water use efficiency by growers, reduce District staff time on water use analysis, and increase water measurement accuracy. Currently, these benefits cannot be quantified but are recognized by water managers from local, state and federal agencies as key components to overall water conservation principles. Improved water use efficiency could reduce costs to growers by decreasing on-farm deliveries. A reduction in on-farm deliveries would reduce diversions from the Feather River, partially addressing CALFED Quantifiable Objective No. 38. Increased water measurement accuracy is a direct benefit to the growers, District, and the state.

Tables 16C-1 and 16C-2 present preliminary budget summaries, and Table 16C-3 presents an assessment of anticipated costs and benefits.

TABLE 16C-1
Water Management Software, H_2O Pro
Western Canal Water District Water Use Efficiency Project

Item	Amount ($)	Quantity	Total Cost ($)	Local Share ($)	CALFED Request ($)
a. Salaries and wages					
Oversight labor	2,000	2	4,000	4,000	0
b. Fringe benefits (none-no indirect costs included with this component)					
c. Supplies					
H_2O Pro Software	10,000	1	10,000	0	10,000
Hand-held data recorders	1,800	6	10,800	0	10,800
Computer	3,000	1	3,000	0	3,000
Bar-coded meter ID labels	1	300	300	0	300
d. Equipment (none)					
e. Services or consultants					
User training	2,000	1	2,000	0	2,000
Annual software upgrades	2,000/yr	15 yrs	19,424[a]	0	19,424
f. Travel (none)					
g. Other direct costs (none)					
h. Total estimated costs			**49,524**	**4,000**	**45,524**

[a]6-percent discount rate over 15-year life

TABLE 16C-2
Water Meter Calibration Station
Western Canal Water District Water Use Efficiency Project

Item	Amount ($)	Quantity	Total Cost ($)	Local Share ($)	CALFED Request ($)
a. Salaries and wages					
Oversight labor	3,000	2	6,000	6,000	0
b. Fringe benefits (none-no indirect costs included with this component)					
c. Supplies					
Meter calibration station	200,000	1	200,000	0	200,000
d. Equipment (none)					
e. Services or consultants					
Legal	10,000	1	10,000	10,000	0
f. Travel (none)					
g. Other direct costs					
Engineering	20,000	1	20,000	0	20,000
h. Total estimated costs			**236,000**	**16,000**	**220,000**

TABLE 16C-3
Assessment of Costs and Benefits
Western Canal Water District Water Use Efficiency Project

Item	Amount ($)	Quantity	Total Cost ($)	Life (years)	Present Value ($)	Beneficiary
Quantified Costs						
Oversight labor	5,000	2	10,000	N/A	10,000	N/A
H_20 Pro software	10,000	1	10,000	15	10,000	N/A
Hand-held data recorders	1,800	6	10,800	15	10,800	N/A
Computer	3,000	1	3,000	15	3,000	N/A
Bar-coded meter ID labels	1	300	300	15	300	N/A
Meter calibration station	200,000	1	200,000	25	200,000	N/A
User training	2,000	1	2,000	15	2,000	N/A
Annual software upgrades	20,00/yr	1	2,000/yr	15	19,424	N/A
Engineering	20,000	1	20,000	25	20,000	N/A
Legal	10,000	1	10,000	25	10,000	N/A
Subtotal					**285,524**	
Quantifiable Benefits						
None	N/A	N/A	N/A	N/A	N/A	N/A
Non-quantifiable Costs						
None	N/A	N/A	N/A	N/A	N/A	N/A
Non-quantifiable Benefits						
Increase on-farm water use efficiency	N/A	N/A	N/A	N/A	N/A	Growers of WCWD
Flow for Quantifiable Objective No. 38	unknown	N/A	N/A	N/A	N/A	CALFED
Increase water use analysis efficiency	N/A	N/A	N/A	N/A	N/A	Growers of WCWD
Increase water measurement accuracy	N/A	N/A	N/A	N/A	N/A	Growers of WCWD & CALFED

Analysis Assumptions:
- 6-percent discount rate
- Present value of costs and benefits are provided in year 2000 dollars

4. Environmental Issues

This project is primarily an exercise in data collection and analysis. No physical impacts are anticipated to occur as a result of the project, although the results of the project may lead to the development of future projects. It is anticipated that the appropriate level of environmental documentation for the project would be a Categorical Exclusion/Categorical Exemption, requiring very minimal effort.

A draft California Environmental Quality Act (CEQA) checklist was not prepared for this proposed project because no physical alterations to the environment would occur as a result of this proposed action.

5. Implementation Challenges

A large portion of this project depends on WCWD users. This project requires cooperation with all of the existing and future water users. District's water rights would have to be guaranteed and preserved. There is concern that a "use it or lose it" mentality may become prevalent during the implementation of this program.

6. Implementation Plan

Task 1— Purchase and install water management software, H_2O Pro, and hand-held data recorders **30 days**

Task 2— Contract for engineering and design of water meter calibration station **7 days**

Task 3— Prepare final design of water meter calibration station **30 days**

Task 4— Contract for construction of water meter calibration station **7 days**

Task 5— Prepare quarterly progress report **7 days**

Task 6— Construct water meter calibration station **60 days**

Task 7— Prepare final programmatic report to funding agency **30 days**

Total Project Timeline **6 months**